

# PATENT SPECIFICATION

(11)

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- (21) Application No. 37063/73 (22) Filed 3 Aug. 1973  
 (31) Convention Application No. 2 239 123 (32) Filed 9 Aug. 1972 in  
 (33) Germany (DT)  
 (44) Complete Specification published 28 Aug. 1975  
 (51) INT. CL.<sup>4</sup> A47L 15/42 // B23P 17/00  
 (52) Index at acceptance B3A 83A11 83A13 83A1 83B4  
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## (54) BLANK FOR A SHEET METAL C CONTAINER

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 TROTECHNISCHE FABRIKEN, a German com-  
 pany, of 7 Stuttgart 1, Heidenklinge 22,  
 Germany do hereby declare the invention  
 for which we pray that a patent may be  
 granted to us, and the method by which it  
 is to be performed, to be particularly  
 described in and by the following state-  
 ment:—  
 10 The invention relates to a blank for a  
 sheet metal container, for example for the  
 washing chamber of a dish washer in which  
 an opening is provided to receive a remov-  
 able or hinged lid and in which a seal  
 15 extends around the opening to provide a  
 water-tight seal between the container and  
 lid. The invention relates also to a con-  
 tainer produced by the use of such a blank.  
 Known dish washers have a chamber of  
 20 rectangular cross section of which the front  
 wall or the top wall is closed by a remov-  
 able lid capable of being made to engage  
 the container in a sealing manner. The seal  
 around the opening that receives the lid  
 25 is formed by a rubber profile strip running  
 around the opening and comprising four  
 straight portions meeting at right angles at  
 the corners and welded together.  
 An effective and water-tight welded con-  
 30 nection between the rubber profile strips at  
 the corners is only capable of being formed  
 with difficulty and with a substantial outlay  
 on labour. Thus another known dish  
 washer employs a one-piece rubber seal  
 35 running around the opening and having  
 only a single joint, the seal being bent  
 around in the region of the corners with a  
 substantial radius. This kind of mounting  
 for the rubber seal does indeed avoid the  
 40 troublesome welding operation, but it suffers  
 from the further drawback that curved  
 hollow-shaped sections have to be provided  
 in the region of the corners to receive the  
 sealing strip, and these have been produced  
 45 independently of the actual container wall  
 [Price 33p]

and connected to the container wall along  
 a curved seam weld. Thus, additional  
 metal welding operations have been  
 involved in the production of the container.

The object of the present invention is to  
 simplify the production of the sheet metal  
 container incorporating the hollow profile  
 sections for receiving the rubber seal. In  
 particular, the invention aims to restrict to  
 a minimum the welding operations needed  
 55 in manufacturing the container and the  
 rubber seal; at the same time to keep the  
 radius at the corners and edges of the con-  
 tainer as small as possible so as to make  
 the best possible use of the space within  
 60 the container.

This object is achieved according to the  
 invention by providing a blank for a sheet  
 metal container, for example for the wash-  
 ing chamber of a dish washer which has two  
 65 opposing side walls, a top wall and a front  
 wall which is formed of a removable or  
 hinged lid which can be locked in a water-  
 tightly sealed manner by using a seal which  
 extends along the front edges of said side  
 70 and top walls and which engages flange  
 portions thereof adjacent to the front edges  
 and directed outwardly of the container,  
 the blank comprising three initially co-  
 planar mutually adjoining wall portions  
 75 adapted to be folded relative to one another  
 along fold lines to form said side and top  
 walls of the container and formed with the  
 said flange portions along one edge of the  
 blank which is perpendicular to the fold  
 80 lines, the said flange portions extending  
 perpendicular to the plane of the blank and  
 having a width which decreases towards the  
 fold lines to become substantially zero width  
 at the fold lines, and which are joined to a  
 85 continuous rim portion which extends per-  
 pendicular to said flange portions in a  
 direction away from the adjoining wall por-  
 tions of the blank.

The blank according to the invention 90

makes it possible to form three container walls corresponding to the three mutually adjoining wall portions by simple practical sharp-edged bending along the two fold lines, the decreasing width of the outwardly directed flange portions in the region of the fold lines allowing such bending without kinking of the flange portions and forming an engaging surface for the seal.

- 10 Preferably, the flange portions in the region of each fold line decrease in width along a curved line so that when the blank is folded along the fold lines the flange portions form an engaging surface with a curved outer edge. Further, the radii of curvature of the two curved lines meeting at a fold line are preferably equal, at least in the immediate region of the fold line.

To simplify the stamping of the sheet metal blank it is advantageous for all the curved lines to be the same, thus the curved lines meeting at a fold line are preferably mirror images of one another about the fold line.

- 25 In a preferred embodiment of the blank, each of the curved lines is one eighth of a circle.

The peripheral rubber seal co-operating with the outwardly directed portions flange preferably has a constant cross-section over its entire length, and thus the width of these outwardly directed portions is kept substantially constant outside the region of the fold lines.

- 35 To simplify the connection of the container to a housing arranged around it, the edge of the rim portion is preferably connected to further outwardly extending web portions which are substantially parallel to the plane of the opening and are cut away in the region of the fold lines so as to simplify the bending of the blank along the fold lines and the connection of a corner angle.

- 45 Preferably, the outer edges of the web portions are bent back so that they form a channel section with the continuous rim portion.

In the manufacture of a container using the blank according to the invention, the blank is folded along the two fold lines so that the three wall portions form the two opposed side walls and the top wall of the container, and a further blank comprising two portions forming the back wall and the floor is connected to the first blank by edges thereof which are bent back substantially perpendicular to said two portions. The two blanks are connected together for example by roll seam welding or by folding or seaming.

An embodiment of the invention is described by way of example with reference to the following drawings, in which:

- 65 Figure 1 is a perspective view of a blank

after folding and ready for use with another blank, (also illustrated) to form a container.

Figure 2 is a view to a larger scale of the corner region of the blank before folding.

Figure 3 is a perspective view of an edge of the blank, showing also the cross-section, and

Figure 4 is a view of the corner of the container of Figure 1 showing further connecting parts.

Figure 1 shows in an already bent form, a blank A which forms the side walls 1, 2 and the top wall 3 of the container, and a blank B which includes the rear wall 4 and the floor 5 of the container. In the manufacture of the container, the blanks A and B are connected together along their edges by welding along the lines which are shown chain-dotted, preferably by the roll seam welding method. The front edges of the blank A define the opening of the container for receiving a lid. These edges are bent outwards perpendicular to the planes of the walls 1, 2 and 3 to form flange portions 6, then forwards to form a continuous rim portion 13 parallel to the said planes, outwards again to form web portions 7, and backwards to form outer flange portions 8. The formation of these various bent portions is illustrated to a larger scale in the detail shown in Figure 3, which shows a portion of the edge of the top wall 3 of the container.

Figure 2 shows a portion of the unbent blank A in the region of a fold line 9 which, after the bending of the portions 10 and 11 of the blank, forms a subsequent edge 9' of the container. It will be seen that the portions 6, 7, 8 and 13 are already formed when the main part of the blank, i.e. the portions 1, 2 and 3, is still in one plane. In the subsequent folding process, the right hand portion 2 in Figure 2 is bent through 90° in the direction of the arrow P about the fold line 9, so that it occupies the position shown in broken lines. In the portion illustrated, the fold line 9 then forms the edge 9' between the top wall 3 and the side wall 2 of the formed container. In the figure looking perpendicular to the plane of the container opening, the laterally outwardly directed flange portions 6 are visible below the further outwardly directed web portions 7. The portions 7 are cut away in the region on both sides of the fold line 9 so that, in the opposed bending of the portions 10 and 11, they do not hinder the bending process. In the formation of the flange portions 6 and rim portions 13 it is important that the latter should be curved inwards along a curved path 12, 12' on each side of the fold line 9, down to the level of the subsequent container walls 2 and 3. The width H of the outwardly directed portion 6 thus reduces progressively in the

region of the curved path and finally at the fold line 9 it reaches the value of practically zero. As shown in Figure 2, each of the curved paths 12, 12' is one eighth of a circle so that after the bending of the portion 10 and 11 through 90° as shown by the arrow P, the two curved paths together form a quarter circle. Thus, while the inside corner of the container after the bending is almost a sharp-edged right angle, the rim portion 13, which is parallel to the adjacent wall of the container, forms, in the region of the corner, a continuous curved engaging surface for the outside edge of the rubber seal that is to be mounted against the flange portions 6. Figure 4 shows a detail of a view of a corner of the container formed between the top wall 3 and side wall 1 of the container. In the region of the corner rim portion 13 extends along a circular path having the radius R. In the interior of the flange portions 6 an attachment strip 14 for receiving the rubber seal is attached by spot welding at 15, 16 and 17. For attachment of the container to the inside of a housing that encloses it, a corner angle piece 18 is attached behind the portion 7 by spot welding. The rubber seal, which is not shown, is mounted on the attachment strip in such a way that it fills in a sealing manner the space between the attachment strip 14 and the flange portions 6.

#### WHAT WE CLAIM IS:—

1. A blank for a sheet metal container, for example for the washing chamber of a dish washer which has two opposing side walls, a top wall and a front wall which is formed of a removable or hinged lid which can be locked in a water-tightly sealed manner by using a seal which extends along the front edges of said side and top walls and which engages flange portions thereof adjacent to the front edges and directed outwardly of the container, the blank comprising three initially co-planar mutually adjoining wall portions adapted to be folded relative to one another along fold lines to form said side and top walls of the container and formed with the said flange portions along one edge of the blank which is perpendicular to the fold lines, the said flange portions extending perpendicular to the plane of the blank and having a width which decreases towards the fold lines to become substantially zero width at the fold lines, and which are joined to a continuous rim portion which extends perpendicular to said flange portions in a direction away from the adjoining wall portions of the blank.

2. A blank as claimed in claim 1 in

which the outwardly directed flange portions in the region of each fold line decrease in width along a curved line.

3. A blank as claimed in claim 2 in which the curved lines formed by the decreasing width of the outwardly directed flange portions on each side of a fold line are of substantially the same radius at least in the immediate region of the fold line.

4. A blank as claimed in claim 3 in which said curved lines are mirror images of one another about the fold line.

5. A blank as claimed in claim 4 in which said curved lines are one eighth of a circle.

6. A blank as claimed in any of the preceding claims in which the outwardly directed flange portions are of substantially constant width throughout their length except for those portions of reduced width in the region of the fold lines.

7. A blank as claimed in any of the preceding claims in which the said continuous rim portion is of substantially constant width.

8. A blank as claimed in claim 7 in which the edge of said continuous rim portion is connected to further outwardly extending web portions parallel to the plane of the flange portions and which are cut away in the region of the fold lines.

9. A blank as claimed in claim 8 in which the outer edges of the said further web portions are bent back towards the wall portions to form outer flange portions which, together with the further web portions and the continuous rim portion define a channel section.

10. A container made from a blank as claimed in any of the preceding claims, in which the blank is folded along the said fold lines so that the three wall portions form the top wall and two opposing side walls of the container, and in which a further blank comprising two portions which form the rear wall and floor of the container is connected to the first blank by edges thereof which are bent back substantially perpendicular to said two portions.

11. A blank for a sheet metal container as claimed in claim 1 and substantially as herein described with reference to the accompanying drawings.

12. A container formed from a blank according to claim 11 substantially as herein described with reference to the accompanying drawings.

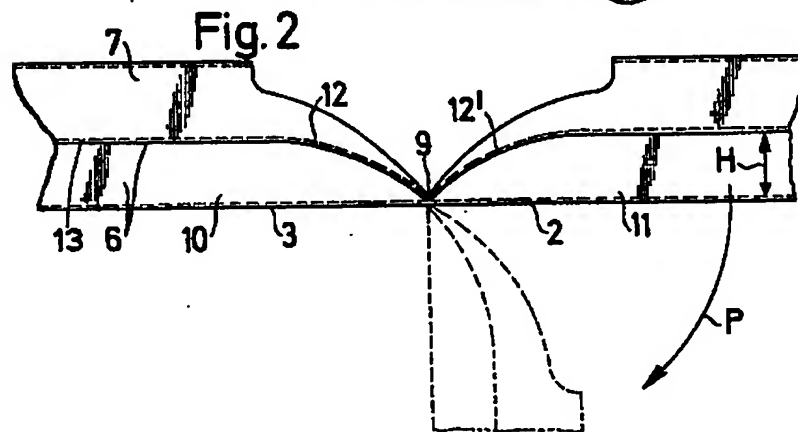
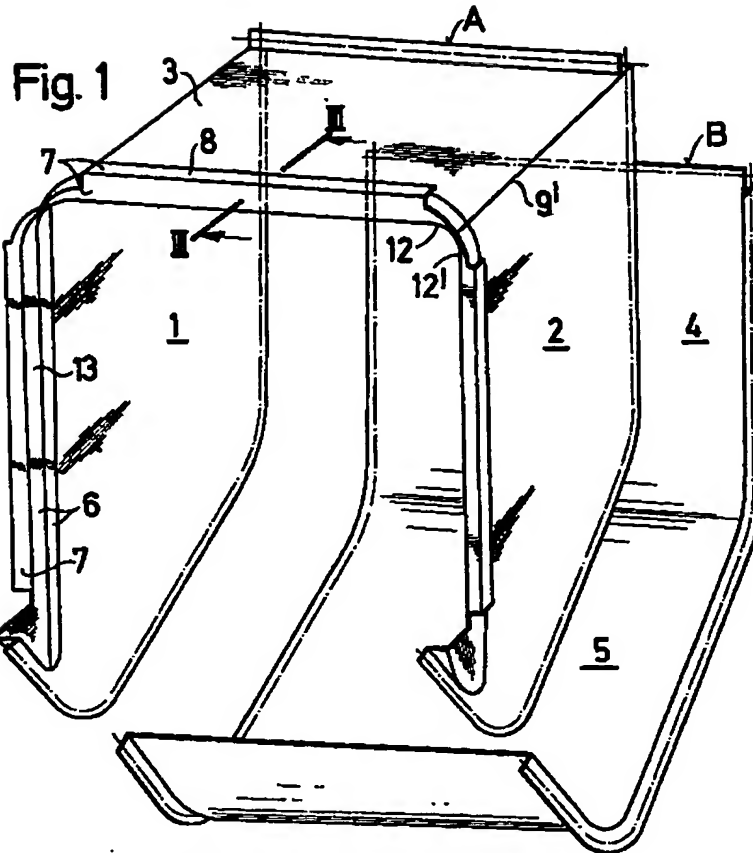
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1,403,953  
2 SHEETS

COMPLETE SPECIFICATION

This drawing is a reproduction of  
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SHEET 1



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**SHEET 2**

